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| EXAMINER | |
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| BALDRIDGE, LUKAS M | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/595,528 | MAK, JOHN | |
| | Examiner | Art Unit | |
| | LUKAS BALDRIDGE | 3744 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *29 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. (U.S. Pat. No. 6,116,050) in view of Agrawal et al. (U.S. Pat. No. 6,116,051) and further in view of Mehra (U.S. Pat. No. 5,678,584) and Jain et al. (U.S. Pat. No. 6,453,698).

Regarding claim 1, Yao discloses methods for separating and recovering propane and hydrocarbons from a gas feed. In FIG. 2, Yao discloses an absorber (a demethanizer 20 for separation) configured to separately receive a first and second portion of a feed gas vapor (29, 33), a first and second portion of a feed gas liquid (19, 66) and a first portion of a distillation column overhead (45).

wherein the first portion of the feed gas vapor (29) and the first portion of the distillation column overhead (45) provide reflux to the absorber (col. 8 lns. 12-26 and col. 10, lns. 29-31);

a control unit (28a) that controls a ratio of at least one of the first and second portion of the feed gas vapor, the first and second portion of the feed gas liquid, and the first and second portion of the distillation column overhead (col. 8, lns. 24-27, controlling the flow through line 26 would necessarily control the flow through line 30 and control their ratio).

Yao does not explicitly disclose the absorber receiving a second portion of a distillation column overhead.

Agrawal discloses distillation column gas processing in FIG. 10 illustrating a first and second portion of a distillation column overhead. FIG. 10 of Agrawal teaches overhead vapor stream (30) separated into stream (32) and stream (35), each stream separately entering a second column (col. 6, lns. 11-32). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Yao to include two overhead streams entering a column, as taught by Agrawal, in order to increase the rate of condensation in the absorber column of Yao.

Yao, as modified by Agrawal, fails to explicitly disclose the second portion of the distillation column overhead provides ethane for re-absorption at the bottom portion of the absorber. However, Mehra discloses NGL fractionation and absorption systems. FIG. 3 of Mehra teaches an absorber (154) receiving a portion of a distillation column overhead (174) providing ethane (col. 2, lns. 5-8) for re-absorption (*the ethane*

*inherently is re-absorbed into the fluid in the absorber column*) at a bottom portion (col. 9, lns. 12-14) of the absorber. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Yao and Agrawal, with Mehra,,, to provide one of the two overhead streams directed into the bottom of the absorber in order to operate in a deethanizer mode and remove ethane and lighter components to acquire $C_3$+ product.

Yao, as modified, also does not explicitly disclose controlling a ratio of at least one of the first and second portion of the feed gas vapor, the first and second portion of the feed gas liquid, and the first and second portion of the distillation column overhead as a function of a desired recovery rate of a feed gas component in a bottom product of the distillation column.

The general concept of controlling a ratio of at least one of the first and second portion of the feed gas vapor as a function of a desired recovery rate of a feed gas component in a bottom product of the distillation column falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain. Jain teaches adjusting the first and second portion of the feed gas vapor (26, 24) in FIGS. 2 and 3 to obtain a desired recovery rate. FIG. 2 illustrates a process scheme for high ethane recovery with stream 26 forming 24% (stream 24 forming 76%) of the flow (col. 10, lns. 31-35), while FIG. 3 shows a scheme for high propane recovery with ethane rejection with stream 26 forming 16% (stream 24 forming 84%) of the flow (col. 12 ln. 67 to col. 13 ln. 1). Thus, the ratio of the flows are adjusted differently for the type of process scheme and each process scheme has a desired recovery rate of a feed gas

component in a bottom product of the distillation column (col. 6 lns. 1-4 and col. 12 lns. 45-50). One of ordinary skill in the art would have been motivated to provide adjusting the flow ratios of first and second portions of feed gas vapor in order to produce a desired product.

In regard to claim 2, and as applied to claim 1 above, Yao, as modified, discloses wherein the distillation column (73) is configured to operate as at least one of a demethanizer and a deethanizer (col. 9, ln. 40).

Yao, as modified, fails to explicitly disclose and wherein the feed gas component in the bottom product is ethane.

The general concept of obtaining a feed gas component in the bottom product being ethane falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain. Jain discloses a flexible reflux process for NGL recovery in FIGS. 2 and 3. The plant can be operated in an ethane recovery mode and an ethane rejection mode (demethanizer and deethanizer, col. 6, lns. 2-12). In the mode illustrated in FIG. 2, distillation column 84 is operated as a demethanizer to produce ethane as the bottom liquid product 110 (col. 12, lns. 20-22). One of ordinary skill in the art would have been motivated to provide a distillation column operable as a demethanizer and deethanizer, as taught in Jain, in order to increase the recovery and production capabilities of ethane in Yao, as modified .

In regard to claim 3, and as applied to claim 1, Yao, as modified, fails to explicitly disclose wherein the ratio determines absorber overhead temperature.

The modification of Yao in view of the teachings of Jain, as discussed above, teaches wherein the ratio determines absorber overhead temperature. Jain teaches varying a ratio of a first and second portion of feed gas vapor depending on a 2 mode operating scheme (see also col. 6, lns. 2-4). The specific ratios of streams 24, 26 in each of the modes illustrated in FIGS. 2 and 3 determine absorber overhead temperature (col. 11, lns. 35-39, “stream 40 is obtained at -143°F” and col. 13, lns. 40-45, “stream 40 is obtained at -88°F”).

In regard to claim 4, and as applied to claim 1, Yao, as modified, fails to disclose wherein the absorber is configured to operate at an absorber pressure, wherein the distillation column is configured to operate at a distillation column pressure, and wherein the absorber pressure is greater than the distillation column pressure.

The general concept of changing the pressure of components in an NGL process to obtain a desired operation falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain, which teaches the concept of operating an absorber at an absorber pressure (col. 8, lns. 8-9) and a distillation column at a distillation column pressure (col. 9, ln. 24), where the absorber pressure (350 Psia) is greater than the distillation column pressure (330 Psia). One having ordinary skill in the art would have been motivated to vary the absorber and distillation column pressures in order to obtain the desired plant operation and product.

In regard to claim 5, and as applied to claims 1 and 4, Yao, as modified, fails to explicitly disclose wherein an absorber bottom product is expanded to provide at least a portion of feed gas chilling.

The general concept of lowering the temperature of a fluid by expanding it to provide cooling to other fluids falls within the realm of common knowledge as obvious mechanical expedient and is illustrated in Yao, which teaches vapor flowing through line 30 (from line 13 at a temperature of about 15°F, see col. 7, lns. 62-63) and through expander 31 is cooled to -55°F (col. 8, lns. 27-31). One of ordinary skill in the art would have been motivated to include the use of an expander in the bottom product 58 of the absorber 20 in order to provide additional feed gas chilling in heat exchanger 12 if desired.

In regard to claim 6, and as applied to claim 1, Yao, as modified, discloses wherein the second portion of the distillation column overhead is fed to the bottom of the absorber (Mehra; col. 9, lns. 12-14) to thereby form a stripping gas (Mehra; FIG. 3; *stream 178 is fed into stripping section 156*).

In regard to claim 7, and as applied to claim 1, Yao, as modified, fails to explicitly disclose wherein the control unit controls a ratio of at least two of the first and second portion of the feed gas vapor, the first and second portion of the feed gas liquid, and the first and second portion of the distillation column overhead. As discussed above, Yao

discloses a control unit (28a) that controls a fluid ratio (col. 8, lns. 24-27, controlling the flow through line 26 would necessarily alter the flow through line 30 and control their ratio). It would be obvious to one skilled in the art to control a second fluid ratio in order to produce a desired flow ratio as similarly produced by the control unit (28a).

In regard to claim 8, and as applied to claim 1, Yao, as modified, fails to explicitly disclose wherein the control unit controls a ratio of the first and second portion of the feed gas vapor, the first and second portion of the feed gas liquid, and the first and second portion of the distillation column overhead. As discussed above, Yao discloses a control unit (28a) that controls a fluid ratio (col. 8, lns. 24-27, controlling the flow through line 26 would necessarily alter the flow through line 30 and control their ratio). It would be obvious to one skilled in the art to control a ratio of the first and second portion of the feed gas vapor, the first and second portion of the feed gas liquid, and the first and second portion of the distillation column overhead fluid ratio in order to produce a desired flow ratio in each portion, as similarly produced by the control unit (28a).

In regard to claim 9, and as applied to claims 1 and 2 above, Yao, as modified, fails to explicitly disclose wherein ethane recovery in the bottom product increases when the first portion of the feed gas vapor increases relative to the second portion of feed gas vapor.

The modification of Yao in view of the teachings of Jain, as discussed above, teaches a plant operated in an ethane recovery mode and an ethane rejection mode

(column 84 as demethanizer and deethanizer, col. 6, lns. 2-12). In the mode illustrated in FIG. 3, column 84 is operated as a deethanizer and vapor streams 26 (first portion), 24 (second portion) are split in a 16 to 84 ratio (col. 12, ln. 66 to col. 13, ln. 1). In the mode illustrated in FIG. 2, the ratio of vapor stream 26 to vapor stream 24 is increased (24 to 76, see col. 10, lns. 32-35) as distillation column 84 is operated as a demethanizer to produce ethane as the bottom liquid product 110 (col. 12, lns. 20-22). It would have been obvious to one skilled in the art to modify Yao, as modified, with the two mode recovery scheme of Jain, and thus the increase a first vapor stream to obtain an ethane bottom product, in order to increase the NGL recovery capabilities of the plant in Yao.

In regard to claim 10, and as applied to claims 1 and 2 above, Yao, as modified, fails to explicitly disclose wherein ethane recovery in the bottom product increases when the first portion of the distillation column overhead decreases relative to the second portion of the distillation column overhead.

The general concept of controlling a ratio of a first and second portion feed to a column as a function of a desired recovery rate of a feed gas component in a bottom product of the distillation column falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain. Jain teaches adjusting the first and second portion of the feed gas vapor (26, 24) in FIGS. 2 and 3 to obtain a desired recovery rate. FIG. 2 illustrates a process scheme for high ethane recovery with stream 26 forming 24% (stream 24 forming 76%) of the flow (col. 10, lns. 31-35), while FIG. 3

shows a scheme for high propane recovery with ethane rejection with stream 26 forming 16% (stream 24 forming 84%) of the flow (col. 12 ln. 67 to col. 13 ln. 1). Thus, the ratio of the flows are adjusted differently for the type of process scheme and each process scheme has a desired recovery rate of a feed gas component in a bottom product of the distillation column (col. 6 lns. 1-4 and col. 12 lns. 45-50). One of ordinary skill in the art would have been motivated to provide adjusting the flow ratios of first and second portions of distillation column overhead in order to produce a desired product.

In regard to claim 11, FIG. 2 of Yao discloses providing an absorber (a demethanizer 20 for separation) and a distillation column (73), wherein the absorber receives a plurality of absorber feed streams (25, 15) and provides a bottom product (55) to the distillation column (via 76);

splitting at least one of the feed streams (25) into a first and second portion (26, 30), and introducing the first and second portions at different locations on the absorber (29 and 33, respectively);

feeding a first portion (45) of a distillation column overhead to the absorber as a reflux.

Yao fails to explicitly disclose feeding a second portion of a distillation column overhead to the absorber. Agrawal discloses distillation column gas processing in FIG. 10 illustrating a first and second portion of a distillation column overhead fed to a second column. FIG. 10 of Agrawal teaches overhead vapor stream (30) separated into stream (32) and stream (35), each stream separately entering a second column (col. 6,

lns. 11-32). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Yao to include two overhead streams entering a column, as taught by Agrawal, in order to increase the rate of condensation in the absorber column of Yao.

Yao, as modified, fails to explicitly disclose the second portion of the distillation column overhead to the absorber for ethane re-absorption at a bottom portion of the absorber. However, Mehra discloses NGL fractionation and absorption systems. FIG. 3 of Mehra teaches an absorber (154) receiving a portion of a distillation column overhead (174) providing ethane (col. 2, lns. 5-8) for re-absorption (*the ethane inherently is re-absorbed into the fluid in the absorber column*) at a bottom portion (col. 9, lns. 12-14) of the absorber. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Yao, as modified, to provide one of the two overhead streams directed into the bottom of the absorber in order to operate in a deethanizer mode and remove ethane and lighter components to acquire $C_3$+ product.

Yao, as modified, fails to explicitly disclose using a flow ratio between the first and second portions to control recovery of a desired product in a bottom product of the distillation column.

The general concept of using a flow ratio between first and second portions of feed streams falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain. Jain teaches that adjusting the first and second portion of the feed gas vapor (26, 24) in FIGS. 2 and 3 to obtain a desired recovery rate. FIG. 2 illustrates a process scheme for high ethane recovery with stream 26 forming 24% (stream 24 forming 76%) of the flow (col. 10, lns. 31-35), while FIG. 3 shows a

scheme for high propane recovery with ethane rejection with stream 26 forming 16% (stream 24 forming 84%) of the flow (col. 12 ln. 67 to col. 13 ln. 1). Thus, the ratio of the flows are adjusted differently for the type of process scheme and each process scheme has a desired recovery rate of a feed gas component in a bottom product of the distillation column (col. 6 lns. 1-4 and col. 12 lns. 45-50). One of ordinary skill in the art would have been motivated to provide using a flow ratio between the first and second portions of feed gas in order to produce a desired product.

In regard to claim 12, and as applied to claim 11, Yao, as modified, discloses a step of splitting another one of the feed streams into a first (19) and second (66) portion, and introducing the first and second portions at different locations to the absorber.

Yao, as modified, fails to explicitly disclose using a flow ratio between the first and second portions of the feed streams, respectively, to control recovery of the desired product in the bottom product of the distillation column.

The general concept of using a flow ratio between first and second portions of two feed streams, respectively, falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain. Jain teaches that adjusting the first and second portion of the feed gas vapor (26, 24) in FIGS. 2 and 3 to obtain a desired recovery rate. FIG. 2 illustrates a process scheme for high ethane recovery with stream 26 forming 24% (stream 24 forming 76%) of the flow (col. 10, lns. 31-35), while FIG. 3 shows a scheme for high propane recovery with ethane rejection with stream 26 forming 16% (stream 24 forming 84%) of the flow (col. 12 ln. 67 to col. 13 ln. 1). Thus, the ratio

of the flows are adjusted differently for the type of process scheme and each process scheme has a desired recovery rate of a feed gas component in a bottom product of the distillation column (col. 6 lns. 1-4 and col. 12 lns. 45-50). Adjusting the flow ratios of a second feed stream would be mere duplication of a known step. One of ordinary skill in the art would have been motivated to provide using a flow ratio between the first and second portions of the feeds streams in order to produce a desired product.

In regard to claim 13, and as applied to claim 11, FIG. 2 of Yao discloses wherein the plurality of feed streams comprises a natural gas liquids vapor (col. 7, lns. 57-59 and col. 8, lns. 12-15) and natural gas liquids liquid (col. 7, lns. 57-59 and col. 8, lns. 2-5).

In regard to claim 14, and as applied to claims 11 and 13, Yao, as modified, discloses wherein the natural gas liquids vapor and natural gas liquids liquid are provided by a high pressure separator (14).

In regard to claim 15, and as applied to claims 11 and 13, Yao, as modified, fails to explicitly disclose wherein the desired product in the bottom product of the distillation column is ethane.

The general concept of having ethane as the desired bottom product of a distillation column falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain, which teaches a flexible reflux process for NGL recovery in FIGS. 2 and 3. The distillation column 84 can be operated in an ethane

recovery mode and an ethane rejection mode (demethanizer and deethanizer, col. 6, lns. 2-12). In the mode illustrated in FIG. 2, distillation column 84 is operated as a demethanizer to produce ethane as the bottom liquid product 110 (col. 12, lns. 20-22). One having ordinary skill in the art would have been motivated to include the use of a distillation column operable in an ethane recovery mode in order to recover a useful NGL if desired.

In regard to claim 16, and as applied to claim 11, Yao, as modified, fails to explicitly disclose wherein the absorber is operated at a pressure that is higher than a pressure in the distillation column.

The general concept of changing the pressure of components in an NGL process to obtain a desired operation falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain, which teaches the concept of operating an absorber at a higher pressure (col. 8, lns. 8-9) than a pressure in a distillation column (col. 9, ln. 24). One having ordinary skill in the art would have been motivated to vary absorber and distillation column pressures in order to obtain the desired plant operation and product.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. (U.S. Pat. No. 6,116,050) in view of Jain et al. (U.S. Pat. No. 6,453,698).

In regard to claim 17, FIG. 2 of Yao discloses providing an absorber (a demethanizer 20 for separation) that is fluidly coupled to a distillation column (73),

wherein the absorber receives a feed gas vapor (29), a feed gas liquid (19), and an overhead product (77) from the distillation column.

Yao fails to explicitly disclose feeding at least two of (a) a portion of the feed gas vapor, (b) a portion of the feed gas liquid, and (c) a portion of the overhead product to the absorber in a manner effective to control absorber overhead temperature such that ethane content in a bottom product of the distillation column increases when the absorber overhead temperature decreases.

Jain discloses controlling absorber overhead temperature by varying a ratio of a first and second portion of feed gas vapor in a 2 mode operating scheme (see also col. 6, lns. 2-4). The specific ratios of streams 24, 26 in each of the modes illustrated in FIGS. 2 and 3 determine absorber overhead temperature (col. 11, lns. 35-39, "stream 40 is obtained at -143°F" and col. 13, lns. 40-45, "stream 40 is obtained at -88°F"). In an ethane recovery mode of Jain, illustrated in FIG. 2, ethane bottom product increases (as opposed to the mode in FIG. 3) when the absorber overhead temperature decreases from -88°F to -143°F.

The general concept of controlling ratios of feed gas to operate in a process scheme to obtain a desired product (such as ethane) falls within the realm of common knowledge as obvious mechanical expedient and is illustrated in Jain, as described above. The modification of Yao in light of Jain teaches an ethane bottom product increasing as absorber overhead temperature decreases, as a result of operation of the modification. One having ordinary skill in the art would have been motivated to include

the use of a two process scheme such as that disclosed in Jain in order to produce a desired product.

In regard to claim 18, and as applied to claim 17, Yao, as modified, fails to explicitly disclose wherein the absorber is operated at a pressure that is higher than a pressure in the distillation column.

The general concept of changing the pressure of components in an NGL process to obtain a desired operation falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Jain, which teaches the concept of operating an absorber at an absorber pressure (col. 8, lns. 8-9) and a distillation column at a distillation column pressure (col. 9, ln. 24), where the absorber pressure (350 Psia) is greater than the distillation column pressure (330 Psia). These pressures are used for a high propane recovery with ethane rejection plant operation. During the ethane recovery mode, the pressure in the distillation column is increased to 383 Psia (col. 11, ln. 47) to obtain the desired product. One having ordinary skill in the art would have been motivated to operate the absorber at a higher pressure than the distillation column pressure in order to obtain the refrigeration required for a desired product as illustrated in Jain's high propane and ethane rejection operation.

In regard to claim 19, and as applied to claim 17, Yao, as modified, discloses wherein the portion of the feed gas vapor (29) and the portion of the overhead product (45) are used as absorber reflux (col. 8 lns. 12-26 and col. 10, lns. 29-31).

In regard to claim 20, and as applied to claim 17, Yao, as modified, discloses wherein the portion of the feed gas vapor (29), the portion of the feed gas liquid (19), and the portion of the overhead product are fed to the absorber (see FIG. 2).

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments filed 10/29/2010 have been fully considered but they are not persuasive. Applicant's argument on pages 8-9 that "the feed stream ratios to the absorber are changed such that the composition in the distillation column bottom product is varied" is not persuasive. As discussed, Jain stands for the general concept that controlling feed gas ratios, and therefore the total feed gas composition, results in control of overhead temperature and bottom product composition. Thus, the teachings of Jain can be applied to the absorber of Yao resulting in control of the absorber bottom product composition, which alters the feed composition entering the distillation column, which ultimately varies the composition of the bottom product of the distillation column since the new distillation column feed gas composition has changed from the original composition due to the absorber feed gas ratio change.

## *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKAS BALDRIDGE whose telephone number is 571-270-3782. The examiner can normally be reached on M-F 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisors can be reached at 571-272-7075 (Judy Swann), 571-272-6681 (Frantz Jules) or 571-2724834 (Cheryl Tyler). The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744

/LUKAS BALDRIDGE/
Examiner, Art Unit 3744